

MISSOURI MONTHLY VITAL STATISTICS

Provisional Statistics

From The



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Focus. . . Maternal Medical, Lifestyle and Other Characteristics and Very Low Birth Weight

Very low birth weight (less than 1500 grams or 3 lbs, 3 oz) is the principal predictor of neonatal (deaths within 28 days of birth) and infant (death within the first year of life) mortality in Missouri as well as the United States. Sixty-eight percent of Missouri resident neonatal deaths and 51 percent of infant deaths in 1998 were very low birth weight (VLBW). For African-American infants the impact of VLBW on mortality is even more dramatic with nearly 82 percent of neonatal deaths and over 60 percent of infant deaths being VLBW.

A large disparity in VLBW is noted between African-American and other race groups including Hispanics for Missouri as well as the United States. Hispanics, non-Hispanic whites, American Indian, Asian/Pacific Islanders all have rates less than half the corresponding African American rate. Because of this disparity race groupings of African-American and non-African-American will be used for this analysis.

Figure 1 shows an increase in the number of births born VLBW since 1980. The number of VLBW babies has increased by 27.2 percent to 1,066 for 1998 and the percent of live births born VLBW has increased nearly 31 percent to 1.4 percent.

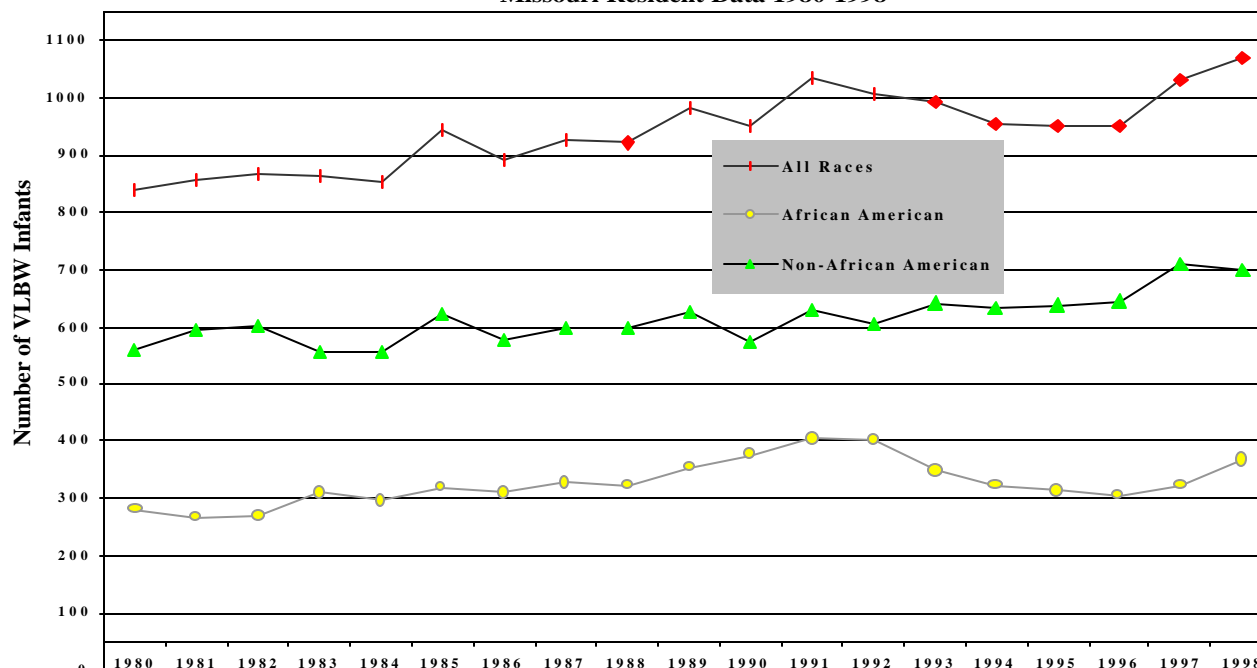
Approximately 22 percent of this increase in the VLBW rate is due to an increase in multi-fetal pregnancies (eg twins, triplets) over the same time period. Because of their large influence the current study will be restricted to singleton live births.

The etiology of VLBW is poorly understood. What follows basically lays out the relationships which can be acquired from information available on the birth certificate and mother's patient abstract record at the time of delivery.

The study population consists of all 1993-1997 Missouri resident singleton live births born in non-military hospitals in Missouri. The linked patient abstract (maternal delivery)/birth data set was used to acquire the study population. The overall linkage rate between the birth certificate and patient abstract delivery for the study population was 98.7 percent. There was very little variation noted in linkage rates by race, order born, mother's education, marital status and geographic area. For VLBW the linkage rate was 94.8 percent.

Risk factors were divided into medical, lifestyle, and other. The medical risk factors are the same as noted for the "Medical Risk Factors for this Pregnancy" section of the birth certificate.

Figure 1
Trends in Very Low Birth Weight by Race
Missouri Resident Data 1980-1998*



The linked data set is used to help partially overcome the problem of under reporting of these factors on the birth certificate. The linked data set resulted in an 89 percent increase over the birth certificate in the reported incidence of "Medical Risk Factors for this Pregnancy".

Table 1 shows the incidence rate per 1,000 live births for the given risk factors along with number and risk ratio for VLBW. The risk ratio is defined as the ratio of the VLBW rate for a given risk factor to the corresponding rate for those not having the given risk factor. Table 1 shows one or more medical risk factors were noted for two out of every five pregnancies resulting in a live birth. The same incidence was noted for Non-African-American mothers as for overall; while for African-American mothers medical risk factors were noted for nearly three out of every five pregnancies resulting in a live birth. The medical risk factor with the highest incidence was observed for anemia and pregnancy induced hypertension for total and both racial groupings. African-American mothers had a higher incidence of all the medical risk factors reviewed except for cardiac disease.

The next grouping of risk factors relate to lifestyle. These include the following: not married, mother under age 18 or over age 34, education less than 12 years, spacing between births less than 18 months, four or more prior births, or using tobacco, alcohol or illegal drugs during pregnancy. Table 1 shows one or more lifestyle factors were noted for nearly three out of every five pregnancies resulting in a live birth. The incidence of lifestyle factors was noted for a little over half of Non-African-American mothers and for nearly seven out of every eight African-American mothers. Overall, the lifestyle factors with the highest incidence were observed for not married and smoking during pregnancy. The lifestyle factors with the highest incidence for African American mothers were not married (eight in ten) and less than twelve years of completed education (one in three). For Non-African-American mothers the highest incidence of lifestyle factors was observed for not married (one in four) and smoking during pregnancy (one in five). African-American mothers were three or more times likely to be under the age of 18, have four or more prior births, not be married and use illegal drugs during pregnancy than Non-African-American mothers. Non-African-American mothers were more likely to smoke during pregnancy or have a child after age 34.

The last group of factors noted as "Other" are not so clear cut in that some can be influenced by personal lifestyle (e.g. weight status and prenatal care) and by other factors (e.g. genetics, biological factors, availability of providers, availability of providers willing to accept Medicaid). African-American mothers were more likely to be greater than 20 percent or more overweight for height (1.3 times), have a prior child die (1.8 times), receive no first trimester care (2.3 times), and live in Metropolitan areas (13.6 times) than Non-African-American mothers.

Table 1 also shows the relative risk of having a VLBW infant by the reviewed factors. Because of the large racial disparity in incidence of some of the factors all relative risk are race adjusted. Infants born to mothers with one or more medical risk factors were over 42 times more likely to be VLBW as infants born to mothers with no medical risk factor. The corresponding VLBW relative risk for African-American and Non African-American infants were 38.3 and 44.3 respectively. All reviewed medical risk factor specific relative risk for VLBW were statistically significantly different from one with all being above 2.0 except cardiac disease and hemoglobinopathy.

In fact, five of the reviewed medical risk factors had relative risk of having a VLBW infant greater than 5.0 (i.e. hydramnios/oligohydramnios (5.1), eclampsia (8.2), incompetent cervix (21.2), previous preterm/small for gestational age (5.2), and uterine bleeding (9.9)). All reviewed medical risk factor specific relative risks for VLBW for Non-African-American mothers were higher than the corresponding relative risks for African-American mothers except for hemoglobinopathy where there was no difference and neither relative risk was significant for VLBW. Also, the VLBW relative risk associated with cardiac disease and insulin dependent diabetes were not significant for African-American mothers.

Infants born to mothers with one or more of the lifestyle factors were 2.2 times more likely to be VLBW as infants born to mothers without any of the factors. All individual lifestyle factors had statistically significant relative risk for VLBW for all races and for Non-African-American mothers. For infants born to African-American mothers with one or more of the lifestyle factors the relative risk of 1.2 was not statistically significant. This was also the case for three of the elements of the lifestyle indicator; namely, not married, education less than 12 years, and spacing between births of less than 18 months. Relative to the medical risk factors all the lifestyle relative risk for VLBW were low in that none exceeded 3.0 with most around 1.5.

All "Other" factors that were reviewed had statistically significant relative risk for VLBW for all races; however, only prior child death had a relative risk above 1.5. For African-American mothers; first born child, prior child death, and equal to or greater than 10 percent underweight for height had statistically significant relative risk for VLBW. The same factors were statistically significant for Non-African-American mothers, plus no first trimester care. That no first trimester prenatal care was not significant for African-American mothers does not negate its importance for identification and management of medical risk factors along with education towards changes in behavior.

The overall incidence of factors relating to lifestyle is higher (57.2 percent) than the corresponding incidence of medical factors (42.9 percent). However, 97.2 percent of VLBW infants were born to mothers with one or more of the medical risk factors versus 74.4 percent for the lifestyle factors. The incidence of mothers having both medical and lifestyle factors was 26.8 percent which was associated with 72.4 percent of VLBW infants.

The pervasiveness of the medical and lifestyle risk factors associated with VLBW supports the need for population based efforts. One such effort will be the statewide Baby Your Baby Media-Campaign which will start this summer. This education effort will address the key known factors related to VLBW and infant mortality.

The above results must be cautioned with the fact that association is not causation and that some of the factors currently believed to be related may have only spurious relationships and that there are other known and unknown risk factors. Also, there is a potential for bias in that some of the reviewed risk factors could be over/under reported depending on the outcome of the pregnancy.

Table 1
Incidence of Selected Maternal Factors by Race with Number and Relative Risk
For Very Low Birth Weight
Missouri Resident Singleton Live Births Recorded in Missouri
Non-Military Hospitals 1993-1997

Selected Maternal Characteristics	Incidence Rate* for factor	All Races VLBW		Incidence Rate* for factor	African American VLBW		Incidence Rate* for factor	Non-African American VLBW	
		#	Race Adjusted RR & CL		#	RR & CL		#	RR & CL
Medical									
Anemia	105.8	747	2.0 (1.9-2.2)	240.8	363	1.6 (1.4-1.8)	80.9	384	2.6 (2.4-2.9)
Cardiac disease	14.5	73	1.7 (1.4-2.1)	11.3	19	1.5 (0.98-2.4)	15.1	54	1.8 (1.4-2.3)
Acute/chronic lung disease	18.6	163	2.6 (2.2-3.0)	28.6	56	1.8 (1.4-2.4)	16.7	107	3.3 (2.7-3.9)
Diabetes-insulin dependent	7.7	53	2.0 (1.5-2.6)	11.9	19	1.5 (0.9-2.3)	6.9	34	2.4 (1.7-3.4)
Hydramnios/oligohydramnios	29.9	475	5.1 (4.7-5.6)	44.7	127	2.8 (2.3-3.3)	27.1	348	7.4 (6.6-8.3)
Hemoglobinopathy	3.0	21	1.1 (0.7-1.7)	16.4	20	1.1 (0.7-1.7)	0.5	1	1.0 (0.1-7.2)
Hypertension, chronic	12.3	169	3.9 (3.4-4.5)	21.7	74	3.3 (2.6-4.1)	10.6	95	4.5 (3.7-5.6)
Hypertension, pregnancy induced	64.2	680	3.7 (3.4-4.0)	86.6	209	2.5 (2.1-2.9)	60.0	471	4.7 (4.2-5.2)
Eclampsia	1.5	41	8.2 (6.3-10.6)	2.1	15	6.6 (4.1-10.6)	1.4	26	9.5 (6.6-13.8)
Incompetent cervix	3.9	268	21.2 (19.5-23.1)	5.9	104	17.6 (14.8-20.7)	3.6	164	24.4 (21.1-28.3)
Previous preterm/SGA**	14.5	242	5.2 (4.7-5.9)	19.9	107	5.3 (4.4-6.4)	13.6	135	5.2 (4.3-6.1)
Renal disease	4.6	46	2.9 (2.2-3.8)	6.8	16	2.2 (1.3-3.5)	4.3	30	3.5 (2.5-5.0)
Uterine bleeding	10.8	306	9.9 (9.0-10.9)	11.0	95	8.5 (7.0-10.3)	10.7	211	10.6 (9.3-12.2)
Any above medical factor	219.3	1,994	5.2 (4.9-5.6)	357.7	715	3.3 (3.0-3.8)	193.9	1,279	7.0 (6.4-7.7)
Any medical risk factor***	429.4	3,052	42.4 (37.4-48.1)	572.7	1,079	38.3 (24.9-59.0)	403.1	1,973	44.3 (34.6-56.6)
Lifestyle									
Not married**	330.1	1,659	1.6 (1.5-1.7)	789.5	891	1.1 (0.98-1.3)	245.5	768	1.9 (1.7-2.0)
Under age 18**	54.5	323	1.5 (1.4-1.7)	124.3	160	1.2 (1.0-1.4)	41.7	163	2.0 (1.7-2.4)
Over age 34**	94.5	369	1.4 (1.3-1.6)	63.5	106	1.6 (1.3-1.9)	100.3	263	1.3 (1.2-1.5)
Education less than 12 yrs**	193.3	857	1.3 (1.2-1.4)	322.8	354	1.0 (0.9-1.1)	169.5	503	1.6 (1.5-1.8)
Spacing less than 18 mos**	64.5	288	1.3 (1.1-1.4)	102.5	116	1.0 (0.9-1.2)	57.5	172	1.5 (1.3-1.8)
Four plus prior live births**	36.7	195	1.3 (1.1-1.5)	86.6	117	1.3 (1.0-1.5)	27.6	78	1.4 (1.1-1.8)
Smoking during pregnancy	209.3	885	1.6 (1.5-1.8)	149.9	221	1.4 (1.2-1.6)	220.2	664	1.7 (1.6-1.9)
Alcohol during pregnancy	16.9	112	1.8 (1.5-2.1)	32.7	65	1.9 (1.5-2.4)	14.0	47	1.7 (1.2-2.2)
Illegal drug use during pregnancy	15.0	132	1.9 (1.6-2.3)	49.1	91	1.7 (1.4-2.2)	8.7	41	2.3 (1.7-3.2)
Any above life style factor	569.8	2,335	1.7 (1.6-1.9)	865.5	975	1.2 (0.99-1.43)	515.4	1,362	1.9 (1.7-2.1)
Other factors									
First born child**	416.8	1,570	1.5 (1.4-1.6)	381.0	471	1.2 (1.1-1.4)	423.4	1,099	1.6 (1.5-1.7)
Prior child death**	22.5	230	3.0 (2.6-3.4)	36.6	106	2.8 (2.3-3.4)	19.9	124	3.2 (2.7-3.8)
Greater than 20% overweight for Height**	288.9	996	1.05 (0.97-1.1)	369.5	425	1.1 (0.95-1.2)	274.1	571	1.0 (0.9-1.1)
Equal to or greater than 10% underweight for height**	169.6	716	1.5 (1.4-1.7)	133.8	197	1.4 (1.2-1.6)	176.2	519	1.6 (1.4-1.8)
Reside in metro area**	716.4	2,371	0.95 (0.9-1.0)	921.4	1,015	1.0 (0.8-1.3)	67.9	1,356	0.9 (0.8-1.0)
No first trimester care**	149.2	646	1.2 (1.1-1.3)	286.8	319	1.0 (0.9-1.2)	123.9	327	1.4 (1.2-1.5)
N		3,139			1,100			2,039	

* per 1,000 live births

RR & CL – relative risk and 95% confidence limits

** from birth certificate only

*** any medical risk factor includes all above plus the remaining "Complications Mainly Related to Pregnancy" subcategory of the Ninth International Classification of Diseases codes 640-648.

Provisional Vital Statistics for March 2000

Live births decreased slightly in March as 6,687 Missouri babies were born compared to the 6,785 one year earlier.

Cumulative births for the 3- and 12-month periods ending with March both show increases in births.

Deaths decreased in March as 4,735 Missourians died compared with 5,649 one year earlier. Cumulative deaths for the three months and the last 12 months also show increases.

The **Natural increase** in March was 1,952 (6,687 births

minus 4,752 deaths). For the 12 months ending with March, the natural increase was 21,461, down from 22,144 in 1999.

Marriages increased slightly for all three time periods shown in the table below.

Dissolutions of marriage increased in March and January-March, but decreased for the 12 months ending with March.

Infant deaths increased for all three time periods shown below. For the 12 months ending with March, the infant death rate was 7.7 per 1,000 live births compared with a rate of 7.5 in 1999.

PROVISIONAL VITAL STATISTICS FOR MARCH 2000

Item	March				Jan.-Mar. cumulative				12 months ending with March				
	Number		Rate*		Number		Rate*		Number		Rate*		
	1999	2000	1999	2000	1999	2000	1999	2000	1998	1999	1998	1999	2000
Live Births	6,785	6,687	14.6	14.9	18,198	19,148	13.5	14.0	75,260	76,708	13.6	13.8	14.0
Deaths	5,649	4,735	12.1	10.5	15,420	15,712	11.4	11.5	53,116	55,247	10.2	9.8	10.1
Natural increase ...	1,136	1,952	2.4	4.3	2,778	3,436	2.1	2.5	22,144	21,461	3.4	4.1	3.9
Marriages	2,942	2,987	6.3	6.6	7,670	8,055	5.7	5.9	43,985	45,699	8.1	8.1	8.3
Dissolutions	2,187	2,493	4.7	5.5	6,220	6,999	4.6	5.1	25,629	25,435	4.7	4.7	4.6
Infant deaths	42	55	6.2	8.2	134	151	7.4	7.9	565	605	7.7	7.5	7.7
Population base (in thousands)	...	...	5,468	5,500	...	...	5,468	5,500	...	...	5,416	5,447	5,476

* Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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